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ABSTRACT

The use of videotape replay was evaluated as a new therapeutic and educational technique in the treatment of mental retardation. It was hypothesized that the retardate would improve his behavior after seeing himself interacting with others on the television screen. The behavior of the control and experimental groups was rated by four therapists and four assistants on a fourteen point behavior rating scale three times during the study: before and after a three month baseline period and after the three month experimental period. Behavior modification techniques were used in both groups to aid motivation. The results showed no significant difference between the control and experimental groups. Some improvement in control of nervous habits, stimulation of performing behavior, and improvement in body image discrimination was noted in the experimental groups. (JY)

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Final Report

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July 1972

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
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U.S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

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ABSTRACT

This research evaluated videotape replay as a new therapeutic and educational technique in mental retardation. It was hypothesized that the retardate would improve his behavior after seeing himself interacting with others on the television screen.

The behavior of the control and experimental groups was rated by four therapists and four assistants on a fourteen point behavior rating scale three times during the study: before and after a three month baseline period and after the three month experimental (or control) period. Behavior modification techniques were used in both groups to aid motivation.

The results on the Basal Behavior Rating Scale showed no significant difference between the control and experimental groups. Although there was no significant difference in behavior evaluated on the Basal Behavior Rating Scale, observers noted various influences of the videotape replay on the behavior of the retardates. Examples of improvement in nervous habits, stimulation of performing behavior and improvement in body image discrimination were seen in the experimental group.

It is recommended in future studies that videotape replay techniques be used for a longer period of time in order to produce greater effect. In addition, more sensitive and comprehensive behavior rating scales should be applied.

PREFACE

This research study represents one of the first efforts to experimentally evaluate videotape replay as a technique of learning in mental retardation.

The author wishes to acknowledge the assistance of the United States Department of Health, Education, and Welfare for the Regional Research Program Contract, OEC-9-71-0050(057) which made this study possible.

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The study could not have been conducted without the cooperation of Hope for Retarded Children and Adults, Inc., San Jose; the staff of the Adult Development Program, directed by Tom Williamson, M.A.; and The Wright Institute, Berkeley.

Special thanks go to the clients of Hope for Retarded Children and Adults, Inc., who participated in the study.

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I. Introduction

Severely and moderately retarded adults have many deficiencies in cognitive skills in addition to their other handicaps. Poor memory and judgment, inability to discriminate or generalize, lack of symbolic awareness resulting in poor language development, and lack of understanding of self and comprehension of environment prevent him from becoming vocationally and socially independent. These cognitive deficiencies keep him, for the most part, in either the prelogical or early logical period of development usually seen in the normal child around five or six years old. (Piaget, 1967)

Difficulty in planning treatment and training programs is caused by the fact that in many ways the severely retarded adult has matured. His body has developed biologically and he realizes he is an adult. However, he knows only in a very general way what adulthood means. He may wish to have a girlfriend, but knows nothing of intimacy. He may want a job, but be unable to concentrate for more than five minutes. He may be motivated to work for money, but be unable to tell the difference between a nickel and a quarter.

Techniques of evaluation and learning must reflect both the low functioning level and the adult interests of the retardate. A learning environment must provide an activity which is simple enough to be accomplished but which also stimulates attention. Research is needed in both the development of a curriculum guide and the use of new educational techniques which are adaptable to this problem.

This study investigates the effects of videotape replay on the adaptive behavior of severely retarded adults. The purpose of the study is to evaluate this technique as an educational tool for the improvement of cognitive skills in the retarded.

Before going into the design and procedures used in this study, we shall review previous work done in the field of adult retardation.

II. Review of the Literature

A. General Approaches in Adult Retardation

According to Bortner and Birch (1970) three approaches to cognitive competence in the field of adult retardation have originated in Britain, Russia and America.

The British generally emphasize the work and productivity aspect of cognitive learning by tapping potential work skills and adapting the social and training conditions to fit the needs of the retardate. The emphasis in this approach is on strengthening the vocationally useful skills the retardate has left, rather than treating the retardate as a whole person and working with the total problem of retardation. Cognitive skills, such as self-concept, and survival skills including safety, money values and cooking are only peripherally stressed in training.

The Russians have designed a simplified symbolic language system which overcomes many of the problems which the lack of cognitive skills causes the retardate. The inability to understand numbers and letters, which in part is caused by lack of fine discrimination, affects the adult retardate's independence. Money, signs, labels, and directions are not understood. By substituting a less refined symbolic language, the Russians permit the adult retardate to become more self-sufficient.

Compared to the British and Russians, the American approach emphasizes motivation and the benefits of demand and reward as well as evaluating the whole personality of the individual retardate.

What Bortner and Birch do not say is that actually an estimated 201,000 retarded persons in America are institutionalized at a cost of $300,000,000 a year. (Lillywhite and Bradley, 1969) And thatthese retarded are often rejected by society and profoundly neglected there for their entire lifetime. This inhuman situation has caused a new movement of the adult retardate into the community in foster homes and boarding houses. It is claimed that this new rehabilitation plan for the adult retardate is not only more economical for the communities but also self-actualizing for the retardate. Dingman (1968) warns, however, that although community living in-of-itself appears to promote self-actualization in the adult retardate, actually there has been little sociological research in this area. He states that studies should investigate what type of home and job environment is most suitable for the adult retardate in order for him to achieve his fullest potential.

He feels that unless future research studies look into the needs of the retarded adult, the community may by their non-action, force the retardate into a life of isolation, inactivity and complete dependence. In order to understand and provide for the needs of the adult retardate in his new role in the community, we must look at retardation in the adult.

B. Adult Retardation

Evaluation of the adult retardate is different from that of the child. The current American Association of Mental Deficiency's general definition for mental retardation identifies two dimensions, intelligence and adaptive behavior.*

Intelligence in the retarded can be measured on such scales as the Wechsler Adult Intelligence Scales (WAIS) or the Stanford-Binet. However, Rabin (1968) points out that these scales measure what can be thought of as fixed tools of thought rather than the process of thought. A complete understanding of the intelligence of the retardate would include a measurement of both areas.

The adaptive behavior of the retardate is usually measured on the Vineland Social Maturity Scale, but this scale was designed for use with children, not adults, and has the additional disadvantage of not differentiating between habitual and optimal functioning.

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* Definition of retardation. Retardation has been recognized by society in many cultures. However, the definition of retardation depends in part on the standards of a particular society; and are, at best, somewhat transitory and provisional. The definition most widely accepted in the United States is the official one of the American Association on Mental Deficiency. It states that mental retardation is "all degrees of mental defect due to arrested or imperfect mental development as a result of which the person afflicted is incapable of competing on equal terms with his normal fellows, or managing himself or his affairs with ordinary prudence." It is a condition of "subaverage general intellectual functioning which originates during the developmental period, and is associated with impairment in one or more of the following: (1) Maturation; (2) Learning; and (3) Social Adjustment." (Lillywhite and Bradley, 1969)

While in childhood an I.Q. or Vineland score provides the criterion needed to place a retarded child in either an educable or trainable program, in adulthood, it is not a meaningful classification. Previous research has found that such scores do not necessarily correlate with vocational success. (Appell et al, 1968; Dubrow, 1968)

Once the child has been classified as a retardate, it does not necessarily mean he is considered one when he becomes an adult. Many children labeled as retarded during childhood "disappear" into the community upon leaving school to become independent adults. This fact stimulated Katz (1968) to say that adult retardation was diagnosed only when an adult person needed special services from the community and was found to demonstrate low general functioning. Katz (1970) re-emphasizes this point in a more recent book by stating that an adult with low intelligence who is able to live in the community without help should not be considered retarded.

Those retardates who are seen in community service programs are classified into three levels of adult retardation. The first level is called least able. Such persons are unemployable and dependent, but can engage in social and recreational activities. The second level is called the less able. These people can be employed in a sheltered or well supervised work situation and need help managing their affairs. The third level is called the more able. This person can be gainfully employed, usually after special training, but he sometimes needs help in time of crisis or change. (Katz, 1970)

Millon (1969) adds a fourth, lower level in which the person needs total nursing care and has limited motor and speech development. He labels his levels as profound, severe, moderate and mild.

These levels of functioning are very general and are limited in their usefulness when looking at competence in the retarded adult. We must look at the vocational literature to see what adaptive behavior and skills have been found to be important in the successful adjustment of the retardate.

According to Dimichael and Terwilliger (1957) retarded adults have considerable job potential in the unskilled and semiskilled occupations. They state that there are wide disparities in abilities within retarded individuals. Katz (1968) agrees with this point and adds that the evidence

from various studies show that retarded adults do profit from training, rehabilitation, recreation and creative expression and that many can realize their full potentials as working members of society. Many authors, including Bitter and Bolanovich (1970), agree that maximum learning in work skills is dependent on early training which includes verbal discussion and praise as part of the training program.

In the opinion of the author these conclusions are reinforced by her experience with eighty severely retarded adults in a prevocational activity unit. The factors which seem to influence vocational learning are emotional and motivational. The author has found that many of the adult retardates are emotionally unstable. They exhibit excess nervousness, outbursts of crying or giggling, distractibility, and rigidity which influences their ability to learn any skill. There is also evidence that the younger retardate in his twenties is more flexible in learning new skills. The adult retardate closer to forty and usually previously institutionalized prefers to continue doing jobs such as sweeping the floor, sanding furniture, or sewing, which he has learned to do adequately and for which he has been given reinforcement, rather than learn a new vocational skill. The answer as to whether age, retardation or institutionalization causes the increase in inflexibility is the subject for a separate study.

Kolstoe and Frey (1965) found in a work study research program established for retarded high school students that the important characteristics needed for employment were dexterity, coordination, discrimination, mobility, attention span, cooperation, willingness, initative, ability to be supervised, ability to count, reaction to criticism, independence, self-confidence, sociability, ability to follow a routine, judgment, responsibility, care of property and recognition and the amount of personal abilities and limitations.

Appell and his associates (1968) found in their study that the factors which were not significant were judgment, following written directions, manual dexterity, attendance, punctuality and care of tools. They also found that the full scale and verbal I.Q. scores were not significant; however, the nonverbal scale I.Q. scores were significantly higher for those who were employed.

Dubrow (1968) found in his study, which used competitive employment as a criterion of success for the retardate, that the significant factors were being male, twenty-two years old or over, without a serious emotional disturbance, acceptance of mental subnormality, previous work experience, a fairly realistic job preference and some reluctance to enter the subcontract workshop. It was found that high I.Q. scores, reading level, sociability, and an adequate knowledge of the job culture were not always present in successful retardates. Although this study did not measure self-concept, the author recommended that further research into the self-concept of the retardate and his perception of social roles would be important for his vocational development.

Several studies have shown that self-confidence is a vital part of the retardate's ability to adapt successfully to the vocational environment. Neham (1957) stresses the importance of social and emotional adaptability in leading to the success of the adult retardate. He feels that a key to adaptability is confidence. In terms of training goals, any technique which would bolster the ego and build up the self-image would make the retardate a happier and more effective functioning individual. Ethridge (1963) describes the type of tasks which lead to a positive self-image. He specifies that occupational therapists and other vocational rehabilitation workers should promote such tasks as positive attitudes toward others, acceptance of supervision, reliability, and self-control. White (1971) points out that occupational therapy should provide opportunities for successful performance in work situations so that a patient or trainee can develop his competence. He feels that confidence and self-esteem will follow from work experiences that establish a sense of competence. He further suggests that self-esteem is established by input as well as output. A person must be loved, respected and praised along with performing a job successfully in order to feel competent. According to Katz (1970) the successful retardate definitely has the self-image of a useful, productive person. He feels that this image is developed in the retardate by successful work experience. He feels that there are four gradations of self-image in the adult retardate. First, there is a totally distorted, unrealistic image in which the retardate is dependent, emotionally immature and unaware of what his abilities are but feels that he is perfect. The second is a self-image in which the retardate sees himself as dependent on adults and negative toward them at the same time. At this level, he is still unrealistic about his future. At the third

level the retardate is still dependent, but is optimistic and realistic about the future. The fourth level is an independent adult who is able to compete in society and who works toward a realistic future.

In summarizing the above studies, there seems to be both agreement and disagreement in the factors which are consistant with vocational success. Several studies agree that many adult retardates are vocationally trainable and employable. And there is evidence in some studies that self-concept and early prevocational experience is important to the success of the retardate. However, there is both disagreement and inconsistency in the various studies concerning the skills which are of primary importance. Dubrow describes sociability as not necessary for success; whereas, Neham feels that social adaptability is an important factor. Kolstoe and Frey state that discrimination is necessary for employment and Appell and his associates found judgment not to be significant.

The author feels that previous studies into the factors consistent with vocational success for the mentally retarded have not been adequately researched. The multiple variables which occur in the vocational workshop training have not been isolated and accounted for. Instructional methods and evaluation instruments are not standardized. Duplication of research producing the so-called significant factors is difficult if not impossible. The author feels that future research studies should limit themselves to smaller units of study which can be critically analyzed by others in the field. It is with this thought in mind that the scope of the present study has been limited to evaluating the behavior reactions of adult retardates to only one educational technique.

III. The Present Study

A. Statement of the Problem

The problem which faced the author was how to improve the adaptive behavior patterns of the severely retarded adults with whom she worked in a prevocational occupational therapy unit.

First, the existing adaptive behavior was analyzed and found to be inadequate for any future sheltered workshop employability. Second, the reasons for poor vocationally

adaptive behavior were investigated. These were found to be consistent with a lack of an adult self-concept and a generally poor development of cognitive skills.

In order to teach such cognitive skills, it would be necessary to provide a learning environment simple enough for the cognitive level of the severely retarded adult, yet one which would not appear childish. Learning techniques would also have to be designed to motivate the retardate toward adaptive behavior. This problem was further complicated by two facts; first, there are no sequential cognitive curriculum guides upon which to plan a cognitive learning program for severely and moderately retarded adults; and second, appropriate techniques have not been tested with such a curriculum to see if there is cognitive skill improvement in the retarded adult.

In special education and occupational therapy, perceptual motor problems in retardation have been the main topic of research and training while cognitive problems have only peripherally been recorded and treated, and only rarely researched. Sequential developmental scales and training programs have been established in perceptual motor areas of learning with a result that new techniques have been discovered and old techniques have been better used. (Smith, 1968; Cratty, 1967; Ayres, 1963).

In the area of cognitive skills, only certain abilities such as remembering one's address and telephone number, identifying one's picture, or matching colors are recorded on progress records from special education classes. There is little reference to the sequential cognitive steps involved in learning these pieces of information. (Pupil Development Progress Scale, Monterey County, 1970) Yet we know from research in vocational rehabilitation with the retarded that cognitive skills often mean the difference between success and failure in sheltered workshops or work in the community. Such skills as matching, counting, discrimination of shapes, sizes, colors, ability to remember streets, bus routes, home address, work address and especially a differentiated self-concept including self-evaluation and self-esteem are needed daily by the working independent retardate. (Bitter and Bolarovich, 1970; Brodsky et al, 1970; Katz, 1970, Kolstoe and Frey, 1965; and Neham, 1951) We also know from the literature that better understanding of environmental demands and of one's own realistic limitations result in adaptive behavior and a self-actualized adult retardate. (Katz, 1970; Dubrow, 1968)

Because of this lack of sequential cognitive curriculum scales, this author cooperatively developed a scale previous to the research.* This work provided the author with better understanding of how to proceed in teaching cognitive skills. For the present study one area of cognitive development was isolated for research, that of self-concept.

B. Research Aim

Self-concept or awareness can especially influence other skills, and is the least easily taught. One can rarely see one's self as others see one. Consequently, when videotape equipment became cheaper and easier to use, it was incorporated into various therapy and training programs as a self-confrontation technique. This study represents one of the first attempts to evaluate videotape replay in terms of its effect on adaptive behavior of adult retardates. The author felt that such a research project, in providing knowledge concerning this new confrontation technique in retardation, would be of value to the fields of special education, occupational therapy, psychology and vocational rehabilitation.

Videotape replay has been used for behavior modification throughout the country with individuals having emotional disorders. (Kagan et al, 1963; Moore, 1964; Geertsma, 1965; Burnell, 1968; Wilmer, 1968) All studies show that the subjects gain insight into their behavior by this method. Videotape replay was also found to influence self-evaluation by changing an individual's high denial and optimistic unrealistic view of himself to a more realistic lower denial view. (Burnell, 1969) In one study, the authors felt that the objective picture of the patient interpreted by the patient himself was the stimulus that influenced him to behave differently. They felt that the value of hundreds of gesture signals which were available for immediate videotape review made this technique one of the best to use for behavior change. (Alger and Hogan, 1967)

It would seem from reviewing the literature that videotape would be an excellent modality to use in teaching the severely retarded adult about self-concept. First, it is a precise method of teaching various discriminations concerning self-image and self as compared to others. Second, it circumvents the language barrier which exists at this level of retardation by providing hundreds of gesture signals concerning the self-image. These signals can be understood

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* Cognitive Development Curriculum Guide by D. Burnell and E. Ayres. Unpublished manuscript.

without verbal explanation and at the same time can be used to stimulate language development. Third, it stimulates attention and interest in the retarded by incorporating two of Piaget's (1967) requirements of learning anticipation and reconstruction as well as self-interest. Fourth, videotape replay stimulates thinking in the area of time concepts. The retardate can see himself interacting in the classroom yesterday, a week ago and a month ago. By using this information, a skillful teacher or therapist is able to teach the retardate how to reconstitute the past and to learn to anticipate the future. A fifth learning aim of videotape replay would be to stimulate questions about the immediate environment. Piaget (1967) describes questions as being the substance of childhood thinking. Yet, this lack of energy directed toward finding out about the environment is precisely one of the deficiencies in retardation.

The purpose of this study is to assess videotape replay as a technique for learning cognitive skills. It was assumed that increasing the self-concept and environmental awareness of the retardate by use of the videotape replay technique would result in an improvement of general adaptive behavior.

Success with this method of improving adaptive behavior could mean that some of the retardates in the Adult Development Program would go on to the sheltered workshop and more independent productive life. Generally retardates could become better able to control their own actions and be more productive within the environment. It could also mean that a better system for teaching cognitive skills could be used in special education classes throughout the country.

C. Hypothesis

The severely retarded adult is stimulated to improve adaptive behavior after seeing videotape replays of himself.

Sub-hypothesis I: It is predicted that the experimental group of subjects will improve behavior in some categories of the BBRS as compared to the control group.

Sub-hypothesis II: It is predicted that each experimental subject will improve on three of the 14 categories of the Basal Behavior Rating Scale (BBRS). The investigator working from her personal knowledge of each subject, selected the three categories of likely improvement for each subject.

Sub-hypothesis III: It is predicted that each experimental subject will show improvement in three out of the ten (10) categories on the semantic differential.

IV. Method

A. Setting for the Study

The Adult Development Center, a program of Hope for Retarded Children and Adults, Inc., San Jose, California, was established in 1969 under federal mental retardation legislation, Public Law 90-170. The resulting grant furnished the salaries for a director, social worker, part-time psychologist, a full-time occupational therapist (the investigator), recreational therapist, behavioral specialist and four aides. The program was designed to operate eight hours a day, five days a week during a full year with a maximum of eighty severely retarded adults who reside in the community. As a part of the agreement with Hope and the Federal Government, Santa Clara County provides the building and equipment. Supplies are provided by Hope as well.

The adult retardates in this program are all over eighteen and, in most cases, are graduates from a program for trainables in a special education high school. Before the center was established there was a tremendous gap in community services for the severely retarded adult. If the retarded adult could not fit into a sheltered workshop program he had nothing except a few recreational activities on a part-time basis in which he could attend. Actually, only twenty-five per cent of these special high school graduates ever made contact with the workshop programs. Explanation was usually based on negative parental attitudes toward work and independence for the retarded adult. Moreover, many retardates were not ready socially to handle a work setting and either were kept at home doing a few chores or were sent into Porterville or Agnews State Hospital.

The purpose of the Adult Development Program is to provide meaningful training activities for the severely retarded adult in order to raise the level of functioning in the retardate to the highest potential indedendence possible, and thereby raise his self-respect and dignity.

The program is divided into three major areas: occupational therapy, recreational therapy and a behavioral specialist unit. The training in these areas consists of motor-sensory development in the recreational therapy unit, self-care, grooming

and practical arts in the behavioral specialist unit and prevocational work skills, communication and language development (cognitive skills) and food preparation in the occupational therapy unit.

The Adult Development Center is an innovative program; there have been no standards established within the state or nationally from which to draw information. When the investigator was hired as the occupational therapist and unit supervisor, goals were selected from the literature in occupational therapy and special education. Later, when full enrollment increased the number of clients seen daily in occupational therapy to 70, the variety of individual needs of the severely retarded adults became more obvious. Many of these needs were not being met by the prevocational activity program. Most clients have little self-concept except that they are a member of a certain family or that they are part of the Adult Development Center. They demonstrate little ability to see a social situation from the other person's point of view. Some cannot be motivated to act in the adult role. They play child-like games with peers and staff which are self-defeating. The majority of the clients are unable to communicate their feelings or attitudes about themselves or others. They do not know if they are tall or short, fast or slow as compared to their peers. Most of these severely retarded adults are unable to engage in abstract thought. They have no concept of left or right, cannot correctly identify body or hand positions as related to an object, and cannot tell time or understand the value of money. However, at the same time, they can be motivated to work on a sub-contract which, because they work so slowly, pays them only a few pennies. They cannot remember a two or three step command but remember that Thursday is movie day. Individual personalities influence the way in which these retarded adults learn. Motivation is a complicated problem. Often the individual will quickly reject or avoid a task which is seen as too difficult, threatening or insulting (if the task is perceived as childish). These perceptions often fluctuate daily.

B. Subjects

The subjects were clients enrolled in the Adult Development Center during the years 1971 and 1972. All were in the occupational therapy unit with the investigator at least six hours a week.

The selection process consisted of asking all retarded clients except those who were brain damaged if they would

like to see themselves on television. The parents or guardians of the fifty who were willing were sent a letter explaining the study. If they approved they were asked to sign a consent and release form. A total of thirty-four subjects were able to participate for the entire nine-month study.

The subjects were not drawn from the population at random but do represent the ten mental age sub-groups in the Adult Development Center. It is reasonable to assume that they represent a typical sample of severely retarded adults who are not functioning at their potential vocational level.

The subjects were assigned to the experimental and control groups at random. They were matched according to scores obtained from the Peabody Picture Vocabulary Test (PPVT), and a coin was flipped to decide which group each one would be assigned to.

There were eight women and nine men in the experimental group. Their ages ranged from 20 to 34 with the mean age of 25. The I.Q. scores obtained from both the Binet and the WAIS ranged from 27 to 60, with a mean score of 43.9, not counting one subject who was untestable. The PPVT mental age scores ranged from a low of 3 years 10 months to a high of 12 years 11 months with a mean mental age score of 7 years 2 months. (See Table 1)

There were eight women and nine men in the control group. Their ages ranged from 20 to 39 with a mean of 24.7 years. The I.Q. scores obtained from both the Binet and the WAIS ranged from 25 to 57. The mean I.Q. score was 43.5. The PPVT mental age scores ranged from a low of 3 years 4 months to a high of 12 years 11 months. The mean mental age score was 6 years 8 months. (See Table 1)

Both the experimental and control groups were illiterate except for a few words, such as their names, which they could recognize. Their personalities and abilities were all very different although all had been classified as trainables when enrolled in special education classes.

There were two advantages in using these subjects in this study. They were stable with regard to attendance, punctuality and participation. They were known by the investigator and therefore could be studied in a natural situation.

There were three disadvantages in using these subjects. The instructor/judges were previously biased toward individual subjects. Some subjects were favorites, others were thought

of as having no potential for change. The variety of treatment procedures in the total activity program caused variables which were beyond the control of the investigator. The investigator had bias toward individual subjects.

C. Apparatus and Procedure

The instruments of treatment were a Sony Portable Battery Operated Recording System, Video-Rover II, Model AV 3400/ AVC 3400 and an ordinary television set. This equipment was used for the experimental procedure of videotape replay.

Videotape replay is a self-confrontation technique whereby a person sees himself on the closed circuit television.

Behavior modification was used in this study as a technique of reinforcement for responses to the television image. During the videotape replay sessions the experimental subjects were asked questions about what they were seeing on the television screen. For example, they were asked to discriminate types of activities being performed, differences between themselves and others and recognition of facial expressions. For the correct answers to questions (or any positive effort) they were verbally praised. Incorrect responses, no response or over response was ignored or corrected by the investigator.

Two methods of measuring behavioral change in the subjects were planned for this study. The first was to be observation and rating of behavior seen in the Adult Development Center by four therapists and four assistants who normally work in the program. The second method was to be observation and rating of videotaped behavior of subjects by outside judges.

Two instruments of measurement were selected to record behavior change. They were the Basal Behavior Rating Scale (BBRS) to be rated by eight instructor/judges in the Adult Development Center and a semantic differential to be used with videotaped behavior of the subjects and rated by student teachers working on a credential in the trainable level special education program at San Jose State University.

The BBRS was designed to use with severely retarded children and adolescents who could not otherwise be tested. Its purpose was to describe and evaluate the "non-intellectual traits" or behavioral levels seen by therapists and teachers. (Blodgett and Warfield, 1959) It is now being used by Blodgett

in a long-term study of prediction of adult adaptive behavior and it has been used previously by an institutional staff team to rate retardates for a doctoral study (Izutsu, 1965) in which behavior change was measured in connection with a new training program.

The instrument itself is composed of 14 questions which can be answered in 5 possible ways, each answer describing a way in which the subject behaves. Each answer is rated from 1 to 5 points, the best score being 5 in each category and 70 for the combination of categories. A sample question will illustrate the test. The complete test will be found in the Appendix B.

I. Conformity to Requests - General Cooperativeness

Points

1 Typically refuses, resists and means it. Cannot give cooperation voluntarily.

2 Often refuses, but is open to persuasion... can be talked with.

3 Frequent refusals, but only when upset, or teasing, for some special reason.

4 Rare refusals, but only when upset, or teasing, for some special provocation.

5 Typically complies and is spontaneously helpful.

There are no norms for severely retarded adults in this test since it was designed and has been previously used only with children.

The advantages of using this type of behavior scale are that it can be applied to behavioral change in any situation and can be quantified easily for statistical purposes and anyone can use the scale with a minimum of direction.

The second method of measuring behavioral change consisted of videotaped behavior responses viewed and rated on a semantic differential by independent judges. The problem of what behavior to videotape for this part of the research was difficult to solve. An environment had to be created which would give every opportunity for showing behavior

change, if such change had taken place. It was felt by the investigator that there should be a chance to respond verbally and nonverbally to objects, a person and themselves at the level of comprehension of the retardates. Also there should be opportunity for creativity and fantasy.

The videotape test which was designed by the investigator consisted of three parts: a request to make something out of play dough, to look at a box of toys and to say something about one's own image in a mirror. The complete description of the procedure can be found in Appendix C.

The semantic differential which was planned for use with the above videotaped tests was composed of ten pairs of adjectives numbered 1 through 10 which could describe the subjects: confident...unsure, comfortable...nervous, adult... childish, calm...hyperactive, attentive...distracted, expressive... withdrawn, modest...boastful, pleasant...unpleasant, realistic... unrealistic and able to perform...unable to perform. These adjectives were based on the usual behavior demonstrated by the subjects.

Both measuring instruments have basic weaknesses. First, the information about behavior must rely on judgmental statements rather than verifiable behavior observation. Second, neither instrument has been sufficiently studied to provide a basis for relating patterns of measured behavior to treatment or training needs.

In addition to the two measuring devices, the investigator kept a daily diary of observed behavior responses to the videotape replay technique during the experimental three-month period.

D. Design of the Study

This is a before and after experimental group-control design, using matched subjects randomly assigned to each group. Subjects' behavior was video-recorded and measured on the BBRS three times during the research study, before a baseline three-month period, and before and after the experimental-control period of three months.

V. Procedure

A. Pilot Study

The investigator presented the research proposal to the Adult Development Program staff and asked for their cooperation

in observing and rating the subjects. Upon their agreement, the investigator provided them with four hours of instructions in how to use the BBRS with several sample retardates to be rated. These ratings were discussed in detail as to particular behavioral interpretation.

B. First Pretest Period

It took six weeks for the staff to observe and rate the 34 subjects on the BBRS and for the investigator to make the videotape recordings of all subjects. The length of time was determined by the other duties required by the staff and investigator as well as absences of the subjects.

C. Baseline Three Months

During this period the subjects were in the normal activity program, which included 1½ hours with the investigator doing prevocational work activities.

D. Second Pretest Period

It again required six weeks to rate and videotape the subjects.

E. Experimental Treatment Period

During this three-month period the subjects were given one hour of prevocational work activities and one-half hour in either the experimental or control group. This procedure took place two or three times a week. On the non-treatment days the subjects spent 1½ hours doing the regular work activities.

On the treatment days the selected subjects went to the separate groups after their regular working hour. The control subjects sat in a circle and discussed, at their own level, environmental awareness and body image. This discussion was lead by the occupational therapy assistant who used the same verbal behavior modification techniques as the investigator to encourage response in the retardates. The experimental subjects sat in a circle around the television set in another part of the same large classroom as the control subjects. The topics of discussion were also environmental awareness and body image, responses were reinforced by behavior modification techniques. The only differences between the two groups were the leaders and the particular methods used to teach the retardates. The control group leader used discussion

a mirror, learning games and performances to stimulate the control group. The investigator used the videotape replay in two different ways along with learning games to stimulate the experimental subjects.

Two videotape replay techniques were used during the three months of experimental treatment period. For the first five weeks the subjects were videotaped while they were working on their projects and work tasks. These tasks consisted of leather work, woodwork, and sewing. After forming the experimental group to watch themselves on the television screen, they were asked to comment on how they looked. Comments such as the following were made daily: "Look at the star!", "Why don't you wave at me?", "Can I put on a play?", "Will you interview me", "Can I dance?" The subjects were asked to describe themselves, but usually would answer only in one word responses, such as "sewing", "sanding", or "lacing". Some of the subjects would mimic their own videotaped facial expressions while watching themselves. Other subjects began to perform for their audiences. The response of the subjects became, on the whole, very casual when compared with the response of the controls who were not able to participate but were able to see the experimental group. More will be said about this later.

The second technique, which was used during the last eight weeks of the experiment, consisted of live television replay. During this phase the subjects were seated around the television set so that each one could see the screen. The videotape camera was placed beside the television set so that the investigator could videotape the subjects looking at themselves on the television screen. This procedure took place during the last twenty or thirty minutes of the regular work skill class. It involved several learning games which were selected for their suitability in using television replay.

The first game was called "performance." Here the subject was asked to do whatever he wanted to do while watching himself on the television screen. The results were waving, spontaneous dances, funny faces, imitations of television characters, singing, acting like a business man shuffling papers at a desk, pretending to read or give a talk, acting like a movie star fixing her face or hair and blocking another subject's picture on the screen.

A second game used during this phase was "Who is it?" Here the investigator pointed the videotape camera at a

close-up of a subject's shoe, hand, shoulder or leg and asked the group of subjects to name the person whose picture was being taken. This game produced some interesting results. The subject being videotaped would test his impression of being videotaped by moving his finger or foot just a little bit before he would answer. Sometimes another person would answer after looking from the television screen to the real person. More interest was added to the game by moving the camera up from the foot to the face very slowly for the amusement of the subject group. The feeling of the group could be described as, "We all know who it is, but let's see all of him and be sure."

A third game was called, "What's the difference?" Here two subjects were videotaped side by side and each subject was asked to name one difference between the two subjects. The answers included boy/girl, tall/short, straight hair/curly hair, long hair/short hair and clothes differences. In the beginning it was difficult for the subjects to play this game, but it progressively became easier as learning differentiation in body image took place. One problem in this game was the tendency of the subjects to look away from the television screen for cues in differences in subjects, such as colors of clothes. This problem was handled by the investigator moving in front of the television set from behind the camera and pointing to the cues seen on the television screen.

A fourth game was "Faces." During this game the subjects were asked to look sad, happy, grumpy, sleepy, angry, or imitate a monster, particular animals, a movie or television star. This game was very difficult for many subjects who often have fixed expressions. This problem was handled again by moving in front of the camera and beside the subject and asking the subject to imitate the expression of the investigator while looking at self and investigator on the television screen. This modeling after the investigator was also enjoyed by the subjects as a group.

A fifth game consisted of simply asking subjects to describe each other's pictures on the television screen. Such questions as, "What is the mood of the person on the screen?" and "Can you tell what he is thinking?" were asked.

The techniques used in the first phase as well as the five games used in the second phase were initiated in order to teach some aspect of self-concept. The working self, the acting self, the expressive self, the self as different from others and the different parts of the bodily self are some of the ingredients of the total concept of self.

F. Posttest Period

During this period the staff of the Adult Development Program again rated the subjects on the BBRS. And the investigator made another set of videotaped recordings.

G. Final Evaluation Period

During this time the investigator edited the videotape recordings for view by the outside judges. After studying the tapes carefully, no discernible difference in the behavior of the subjects could be seen by the investigator. The same objects were made with the play dough, the same toys were played with and the same remarks were made in response to questions about the mirror image. In view of the absence of any apparent effects, it was decided not to proceed with the judgments of videotapes. (These tapes are available at the Wright Institute.)

The results of the study were therefore based on the three ratings obtained on the BBRS and the observational data recorded by the investigator in the daily diary.

VI. Results

A. Summary of Observed Responses of Subjects to Videotape Replay

Of the seventeen subjects exposed to videotape replay, only a few showed any embarrassment at being videotaped or seeing themselves on the television screen. One girl would hide her face as soon as she saw herself on television. When asked how she liked being videotaped she said, "I love that." She later often asked to do dances for the pleasure of watching herself move on the television screen. One boy, who normally refuses to talk, would often not look at himself. When he was asked if he was embarrassed, he would nod, "yes." However, when asked if he wanted to be on television again, he would also nod, "yes." He did actually refuse to be videotaped five times out of thirty opportunities. The thirty times he was videotaped he made faces, smiled at self, giggled and watched others on the screen. He also noded "yes" when asked if he looked good on television. His non-verbal communication efforts increased. Another girl on the occasion of the first time she saw herself looked very nervous and embarrassed during the replay session. When she was asked about this she admitted to feelings about looking "terrible." She asked to have the tape erased and said she didn't like it.

The other subjects who were watching however, said she looked beautiful and she stayed to watch the rest of the tape. After the session, she asked the investigator if she looked terrible and was reassured that she looked pretty.* She later had seventeen exposures to the television replay with active participation.

Another subject who usually appeared very nervous watched his twitching head and hand movements intently for the first month of videotaping. Then he made the statement, "I am not embarrassed any more. I feel great." His nervous habits appeared to decrease after that time. Later, he asked to be camera man as well as be videotaped extra time during the experiment.

Some embarrassment was inferred by the investigator by certain actions of the subjects. Some would get up and leave a work area when the camera was pointed at them using the excuse that they wished to get a drink of water. Others would giggle or cover their faces with their hands when seeing themselves on the screen. However, these responses were short-lived and the subjects voluntarily continued to be part of the videotape replay project. There was no undue pressure used by the investigator to keep the subjects in the research project. They were only reminded that it was time for TV and they would put their other work activities away and gather around the television screen.

A very interesting result of the videotape replay was the effect of the procedure on the control group. Fourteen out of the seventeen members of the control group tried either to be videotaped or to watch the television replay. The attempts ranged from a high of eight times to a low of one, the average number of attempts at being included was 2.8 times. These attempts were discouraged by the investigator, but proved to be somewhat successful a few times during the experimental three months. Some controls would walk by or behind the subject when he was being videotaped. Others would stand between the subject and the camera, completely blocking out the view of the subject. Still others would cover up the lens of the camera with their hand or gently point the camera away from the subject as if by accident. In the second phase, controls would sit in the area of the camera and television set and wait for the time of the taping. They would not move from the area without physical help. Other controls would find excuses to get

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* Actually all the subjects looked very good on television. Although videotape replay is reported to magnify ones features, it actually minimizes the facial imperfections which often accompany retardation.

in the area of the taping and then watch the screen. In general, there seemed to be much excitement among the controls who would shout at the subjects and applaud their actions. They would try to look through the camera and move it around only to be reprimanded by the subjects and the investigator. Three of the controls behaved differently than the other fourteen. They politely asked why they were not included in the videotape procedure and after being told that they would have a turn to be on television in the future, they were satisfied not to get involved further. In summary, it could be stated that the videotape replay experiment aroused a great deal of interest in the members of the control group, even though they were involved in another type of communication class.

In general the videotape replay highly stimulated all people who were in the classroom: staff, visitors, volunteers, students, other retarded clients and both experimental and control subjects. It became the general topic of increased communication between all observers and participants. The noise and excitement level was noticeably higher than normal. The television equipment, as well as the actual videotaped picture, was the focus of interest by everyone. Some retardates became the spokesmen for the technique to the visitors and seemed to enjoy their expertise.

The effect of the television playback technique reached to both the experimental and control groups. The excitement and stimulation experienced by the experimental group seemed contagious; it spread to the control group subjects even though they were engaged in their own, independent communication class in another part of the room.

B. Results of the BBRS Ratings

Reliability of ratings on the BBRS was determined by computing Kendall's coefficient of concordance (W) among raters for the average of all BBRS scales. The W's ranged from .460 for the first pretest period to .552 for the second pretest. For the posttest period W was .539. All these coefficients of concordance are statistically significant (p .001); and they indicate that there was substantial agreement among the raters as to which subjects behaved best, which less well, etc.

In order to evaluate the behavior of the experimental and the control groups for the three BBRS ratings, the entire 34 subjects were ranked according to I.Q. level and divided into a high I.Q. group numbering 17 and a low I.Q. group numbering 17.

There were 10 experimental and 7 control subjects in the high I.Q. group and 10 control and 7 experimental subjects in the low I.Q. group. A mean BBRS score was computed for each subgroup in each of the 14 categories and for each rating period. The mean scores were then used to compare the behavior of the groups. Higher scores in all cases mean "better", more mature behavior. The results are illustrated in Table 3.

The results showed there were no significant differences between the rated behavior of the experimental and the control groups during the three rating periods. Differences were as slight for the high I.Q. groups as the low I.Q. groups. The slight differences which were seen could be accounted for by the many uncontrolled variables in the study. There was no measurable over-all effect on the BBRS scores of the experimental group by the videotape replay technique as compared to those of the control group.

Improvement in adaptive behavior was also predicted individually for the experimental subjects in three behavior categories. The results can be seen in Table 4.

Except for one subject (#210), who improved greatly in one behavior category out of the three predicted, the other 16 subjects did not show any significant degree of behavioral change. The single behavior improvement was in the category of cooperativeness. This particular subject was stimulated by the videotape replay to play act and preen in front of the camera which was his usual nature. However, during the three months that videotape replay was scheduled he concentrated better during the work period and did his clowning during the videotape replay period. He has continued to be able to concentrate after the experiment.

VII. Discussion

What possible results could we have expected from this study and why? We could have found that videotape replay changed the behavior of the experimental group in the direction of more adaptive behavior. This would have meant that videotape replay was a powerful self-confrontation technique which had immediate effects on most of the retarded participants. However, what actually was determined was that videotape replay did not effect adaptive behavior as measured on the BBRS. Consequently, we must look at our study and attempt to evaluate our procedures.

There could have been four types of errors in this study: human, theoretical, methodological or instrumental.

The human errors could have been in rater bias or investigator effectiveness. Both of these factors could be operating in this study since this study represents the first cooperative research project by the Adult Development Center staff and the first such study done with severely retarded adults. However, it is unlikely that either of these reasons would have significantly effected the results.

The theoretical error could have occurred in the assumption that improved self-concept (body image) effects behavior change immediately.

There is no evidence in the literature that self-concept improves quickly or that it effects behavior immediately. On the contrary, it appears to be a slow growth process made up of many encounters with the environment, each with its own effect. (Branden, 1969; Coopersmith, 1967; White, 1964) Therefore, if there were to be any effect from videotape replay as a learning technique, it should be over a long period of time.

The third type of error which could have influenced the outcome of this study is methodological. Is videotape replay an adequate self-confrontation technique and is behavior modification useful to stimulate learning in this area?

A. Videotape Replay as a Therapeutic Technique

Many therapists in psychiatry and psychology have been exploring the value of using videotape replay as a therapeutic modality. (Moore et al, 1964; Schiff and Reivich, 1964; Geertsma et al, 1965; Kagan et al, 1967; Stoller, 1967; Burnell, 1968; Rogers, 1968; Wilmer, 1968) There is unanimous agreement on the beneficial effects of self-confrontation for the participant.

Self-confrontation as a method in therapy began much earlier than the present use of videotape feedback. It was first reported by Carl Rogers (1942) in an article which described the value of using photographs and phonograph recordings to improve self-image in psychotherapy. Much later Cornelison and Arsenian (1960) reported that they successfully used polaroid pictures and sound motion pictures of a patient for the purposes of self-confrontation. Their

procedure focused the patient's self-perception by asking several questions concerning what the patient liked or disliked about himself. The results of this study showed that there were definite differences in the responses of men and women. Women were more interested in the cosmetic aspects of face and hair and men noticed expressions in the face, qualities of strength or weakness and fatigue. In both men and women, who were in psychotic states, it was felt that self-confrontation with a realistic image of one's self was influential in stimulating a change in behavior.

How do the researchers explain the effectiveness of videotape replay in changing behavior? Berger (1970) states that the reaction of a person to self-confrontation by videotape replay is in two stages. First, an individual is primarily interested in his image including facial expressions, posture, gestures and mannerisms. He often may become somewhat anxious and critical of himself during this time. In the second stage the individual becomes aware of his own characteristic way of interacting with others and is able to acknowledge his self-defeating patterns of interaction, something he is often unable to do when such patterns are simply pointed out by a therapist. During this second stage, the individual experiences himself as a subjective-objective participating person. He sees himself as others see him, and he can interpret his own behavior without help. This author (1969) measured the process of the change in a person's self-attitudes after videotape replay as going from a high denial and unrealistic view of self to a low denial and realistic view. A lowering of the defense of denial would without doubt provide an opportunity for the individual to perceive the new information necessary to alter his behavior.

Although the literature shows agreement on the value of videotape replay for changing behavior, there seems to be a great deal of variability in the procedures which are used. Some researchers hide the video camera and equipment, and others have several cameras and television monitors scattered around the room. The general trend is toward openness. Some researchers hire professional cameramen while others either do their own camera work or allow patients or cotherapists to take turns using the equipment with each other. There are differences in the goals which the therapists intend the videotape replay to stimulate in the patient. Geertsma and Reivich (1965) try to strengthen ego discrimination functions and stress modification of self-concept and adjustment

of future behavior. Bergen (1970) sometimes uses the technique to precipitate a therapeutic crisis which will result in removing an emotional block. Paredes and Cornelison (1965) reported using videotape replay with alcoholics to show them how they look when they are drunk.

Wilmer (1968) reports several uses of the videotape replay during four years in a psychiatric hospital. First, he videotapes brief sequences of patient and staff interaction and replays the tape for study and discussion by the participants. Second, psychodrama is videotaped and replayed for discussion by the participants. Third, group meetings of patients are also videotaped and replayed for discussion. Fourth, individual interviews with psychiatrist are taped and replayed for an opportunity to explore their relationship, not for interpretation. Fifth, the individual patient may take his own videotape, look at it and either erase or show the tape to his doctor. Moore et al (1964) used a hidden camera to record the first interview with the psychiatrist and patient. The tape was then immediately reviewed by both the doctor and the patient and the patient's comments were recorded. This procedure was repeated several times during the two to three weeks of hospitalization. The success of this technique resulted in a shortened period of hospitalization as compared to a control group of patients. Geertsma and Reivich (1965) videotaped a forty-five minute psychotherapy session and replayed the tape one week later for a period of six weeks. Success was measured by the patient's more realistic self-assessment. Kagan et al (1967) reported on a technique of videotape replay called Interpersonal Process Recall. In this process a patient is videotaped interacting with another person. Immediate replay takes place with a third person, a therapist, who actively helps the patient to concentrate and relate his recalled thoughts and feelings. This process was found to be more successful with adults than children. It was also successful in stimulating an acceleration in the group process.

Except for the previous study done by this author (Burnell, 1969) the other research findings are mainly opinions of the investigators based on clinical observations. It would appear that there have been no other controlled and measured experiments using videotape replay as a self-confrontation technique of learning. In order to prove the effectiveness of this technique, it must continue to be investigated in further controlled studies. At this time there is not enough information to make a determination of the effectiveness of this method in retardation nor in other areas of human behavior research.

Was behavior modification of value used as the motivational pressure in this study?

There are still many opinions concerning the nature of the learning or therapeutic process. The educator and the therapist are both primarily concerned with the method and condition which stimulate effective learning. It is generally agreed that attentive practice, praise and reproof, and prior understanding of the material presented effect the learning process; however, each learner requires a different combination of these factors in order to learn. The factors involved in the learning process of retardates is confused even more by the complex and unpredictable deficiencies which occur in a variety of combinatons and which need different learning approaches by the educator and therapist. The retarded person may be apathetic, impulsive, emotionally unstable, distractible, overdependent, socially incompetent, have low stamina, motor disabilities, lack of curiosity, sensory impairment, disorders of perception, disorders in concept formation, language disorders and emotional disorders. And to confuse the picture even more, each retardate is different from every other retardate. (Jordan, 1961; Frankel et al, 1966; Lillywhite and Bradley, 1969)

Despite the complexity, there are basically two main goals in learning or therapy. The first is an acquisition of knowledge (intellectual and emotional control). The second is the acquisition of skill (sensorimotor control). In this paper we are interested in the acquiring of knowledge or cognition of self-concept. What is going to motivate the retardate to learn this information?

Both therapy and education are cooperative transactions and are dependent on the motives of the therapist/teacher and the learner. Basically the learner is asked to trust another person's motives and do an activity which has been planned to benefit him. However, if he is unable to understand the long-term goals which inspire his guide, he will through his fear, boredom or ambivalence be his own worst enemy in his development. He, therefore, needs short-term goals to stimulate motivation. Does the second grader understand that by practicing her letters she will win the future pleasure of reading a novel? Does the severely retarded person understand that by learning to share he will have the future pleasure of being independent?

As therapists and teachers we need to be aware of the distinction between what the patient or student wants and

what he needs to develop. Pilisuk (1963) suggests that a person's needs are centered in his ego and that his desires are centered in his self-concept. The distinction between needs and desires can be illustrated by one's choice of clothes. One needs clothes to keep him warm or covered, but the desire for certain clothes is concerned with comfort and attractiveness which are qualities of self-concept. This point of view is considered the objective and subjective sides of any issue. In motivation we must consider the subjective opinion of the learner. We must respond to what he wants to do. In retardation motivational factors can be peer pressure, a desire to please the teacher, or a wish to obtain a piece of candy or a cup of coffee. Motivation can be complicated by negative factors such as the expectancy for failure, positive or negative reaction tendencies or patterns of outer directedness which exercise a strong influence. In a learning program which is emphasizing connitive development for the retardate, the tendency to be outer directed will be the most difficult motivational force to discourage. In this pattern of behavior the retardate mistrusts his own solutions and seeks guides in the environment. This tendency causes constant imitation of any observed actions of others with little ability to distinguish adaptive from maladaptive behavior. Another negative motivational factor which must be considered in planning a cognitive development program is that cognitive tasks in themselves are not very interesting. Although there are many difficulties in providing motivation in retardation, there is one technique which has proven to be very useful, behavior modification.

It is felt by the investigator that behavior modification technique should continue to be used with videotape replay with the retarded and strengthened by changing the reinforcement from verbal praise to token rewards.

Instrumental error is the fourth area of possible influence in this study. The BBRS is indeed limited in measuring behavior related to cognitive development in self-concept. The areas of behavior which are measured are only indirectly related to newly learned differentiation abilities. The investigator would expect that another type of measurement would be more sensitive to cognitive growth. The videotape sequences were also not well designed to measure any new learning effected by the videotape replay experience. New research should be done in this area of measurement.

Although there was no significant behavior change for the experimental group as rated on the behavior rating scale

nor as evidenced by the videotape sequences, there still appeared to be definite individual reactions and behavioral changes effected by the exposure to videotape replay.

The investigator observed a decrease of nervous mannerisms with some retardates together with an increase of alertness, responsiveness, expressive behavior, a desire to be videotaped and improved self- and environmental-discrimination. There was a general desire among all retardates, both control and experimental groups, to be videotaped and to perform on television for an audience. In general, they all enjoyed watching each other on the television screen as much as seeing themselves. All performances were greeted with positive comments and clapping. Excitement and stimulation tended to be high and directed toward the videotape replay experience.

VIII. Summary

The primary behavior assessment instrument, the BBRS, showed no differences between experimental and control groups, nor between pretest and posttest ratings. Neither was the prediction of improved behavior in categories pre-selected by the investigator borne out. Videotapes made in the first and second pretest period and after the experimental videotape replay periods showed not observable differences as a function of the videotape replay.

Nevertheless, the investigator and other staff and visitors did notice marked effects on the television feedback sessions on a number of individual retardates, including experimental subjects, control subjects, and other retardates who were in the room, but who were not participants in the experiment. Even some of those retardates who only observed the videotape replay sessions from across the room responded with increased affect, more attentiveness, greater eagerness to perform, and/or better ability to discriminate, e.g., between individuals, clothing, ornaments, etc.

IX. Implications

1. The effectiveness of videotape replay as a technique of learning for the retardate depends on the effectiveness and skill of the therapist or teacher.

2. There should be additional controlled research studies on the effectiveness of videotape replay in retardation.

3. New measurement scales should be devised to use with videotape replay which measure self-concept and/or cognitive learning in the retarded.

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APPENDIX A

LETTER TO PARENTS

CONSENT AND RELEASE FORM

Hope For Retarded Children & Adults, Inc.
2300 CLOVE DRIVE · SAN JOSE, CALIFORNIA 95128 · (408) 295-1065

A Non-Profit United Fund Organization

Developing and providing services for mentally retarded children and adults

Mrs. Patricia Hobbs Executive Director

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August 18, 1971

Dear

This letter is for the purpose of asking you to sign the enclosed "Consent and Release Form for Videotaping." By signing this form you will be allowing_____ to take part in a research study which I have proposed, to help teach the clients in the Adult Development Center.

The study has been approved by both the Professional Advisory Board and the Board of Directors. In addition, it has also been approved for financing by the Department of Education, HEW.

The technique of videotape replay, that is, seeing yourself on television, has been used successfully in both educational and therapeutic centers to the field of Mental Retardation to train the retarded. The results of this study will provide the needed information to evaluate videotaping replay as a useful new teaching method for the retarded.

We first used the technique at the Adult Development Center about one year ago and thought that it showed great promise in an informal way. We have now obtained a grant to continue the development of this promising new method.

If you have any questions concerning this letter, please call me at the Adult Development Center, if not please send back the "Consent and Release Form" in the enclosed envelope. Thank you.

Sincerely,

Diana Burnell, M.S., O.T.R.

Enclosures 2

CONSENT AND RELEASE FORM FOR VIDEOTAPING

Consent is hereby given to the Adult Development Center, Hope for Retarded Children and Adults, Inc. and Mrs. Diana Burnell, Occupational Therapist, as its representative, to take audiovisuals of _____ singly or in a group for the purpose hereinafter set forth.

Mrs. Burnell has been awarded a H.E.W. grant through Wright Institute to evaluate the use of videotape in the treatment and training of the adult retardate. The videotapes will belong solely to the Wright Institute. They shall be used only for the purpose of research in retardation, client training and training of professional therapists and teachers. The videotapes resulting from this study will not be published.

I agree as guardian of _____ that neither I nor the above named person shall have any right, title, or interest in the videotapes, nor shall there arise or rest in me or in the above named person any cause of action for damages for injuries other than physical injury which may be proximately caused by negligence and without contributory negligence on my part, or on the part of the above named person by virtue of the taking of videotapes in the manner and for the purpose herein described.

Dated _____ Name_____
Address _____
_____

It is agreed that the foregoing terms shall be complied with:

Dated _____ Name _____
Diana Burnell, M.S., O.T.R.

Dated _____ Name _____
Edward Opton, Jr., Ph.D.
The Wright Institute

APPENDIX B

BASAL BEHAVIOR RATING SCALE (BBRS) DIRECTIONS

To: Adult Development Staff

From: Diana Burnell

Subject: Basal Behavior Rating Scale

Background: I first found the Basal Behavior Rating Scale (BBRS) in another Ph.D. dissertation which was written by an occupational therapist, Satoru Izutsu. His dissertation was entitled, "A motivation and training program for the very severely and profoundly mentally retarded." He conducted his research in a state hospital in Hawaii. The raters were ward personnel and 11 raters representing nursing, medicine, psychology and occupational therapy. The subjects were severely retarded who ranged from 6 to 19 years.

There were many similarities in our population and problems in research so I decided to try evaluating our clients in O.T. to see if I could obtain a reasonable profile of the client that would show up both his strengths and weaknesses for future reference in treatment. After trying out the scale for eighteen months, I find that it is very useful and easy to use.

In this study the BBRS will serve as a common ground of discussion so that we as the staff will be able to work together on behavioral goals for the clients. The results of all the ratings will be looked at statistically to see if there is any difference in client behavior while they are seeing themselves on television. The third purpose of the BBRS is for isolating one main maladaptive behavior for each client so that the staff can work as a team to improve the client using behavioral modification techniques.

Procedure: The BBRS enclosed has been designed to eliminate a set pattern of answering so that each descriptive rating item must be read carefully. That is, one category will begin with the rating 1 item and the next category will begin with the rating 5 item. It is important to rate the client in all areas even if you do not know him well enough to be positive of your opinions. Be sure to read each item carefully, then decide the most appropriate description for the client being rated. Each item within a particular category has five units. The highest level for each category is the number 5. The lowest level for each category is the number 1.

This scale is limited to fourteen categories:

Conformity to Requests - General Cooperativeness
Individual Constructive Activities
Participation with the Group
Interaction with Individuals
Interest and Progress in Learning
Independence and Self-Help
Persistence with Tasks
Constructive Conversation and Communication
Excessive Conversation
Stability of Activity Level - Degree of Freedom from Hyperactivity
Absence of Antisocial Behavior and Fighting
Absence of Irritability
Ability to Tolerate Frustrations
Apparent Health

Past use of the scale has shown that raters agree closely in their use of the scale; however, it is very important that you work alone and not show each other your ratings while you are doing them.

BASAL BEHAVIOR RATING SCALE

By Blodgett, Harriet E. and Warfield, Grace J.

I. Conformity to Requests - General Cooperativeness:

Points

1 Typically refuses, resists, and means it. Cannot give cooperation voluntarily.

2 Often refuses, but is open to persuasion...can be talked with.

3 Frequent refusals, but only when upset, or teasing, for some special reason.

4 Rare refusals, and only with special provocation.

5 Typically complies and is spontaneously helpful.

II. Individual Constructive Activities:

Points

5 Initiates own constructive activities, in variety; gets satisfaction from them without special assistance.

4 Initiates own constructive activity, seeks help when needed, but is generally constructive.

3 Needs help at the beginning, but can carry on an activity suitable for him "on his own."

2 With some suggestion and direction, can get a constructive activity under way, but needs almost constant adult attention to keep at it.

1 Even with suggestion and direction, usually "rams around," cannot carry on any constructive activity; generally destructive, although not necessarily intentionally.

III. Participation with the Group:

Points

1 "Lone wolf" - very rare participation in group; typically solitary. In group only with staff (adult) forcing for inclusion.

2 Rare group participation, in only a few activities, and with adult steering.

3 Selective participation in group, depending on who else is in it.

4 Generally is a part of whatever group activity is going on; prefers group activities.

5 Typically a group is around him; shows high degree of participation and organization; a "leader."

IV. Interaction with Individuals:

Points

5 Very successful with individual contacts; initiates and sustains them.

4 Very frequent interaction with individuals; longer duration without special supervision.

3 Frequent interaction with individuals; may not be successful, but many contacts.

2 Interacts more with staff (adults) than with other clients (children); dependent rather than social.

1 Typically alone; very rare interaction with an individual on own initiative; may be with other client (child) at other's initiative.

V. Interest and Progress in Learning:

Points

1 Shows regressive behavior; or seems to resist learning.

2 Rather a "dead level" on progress in learning; shows little forward motion.

3 Shows interest in learning in some areas; not consistently, and may be short-lived; progress variable.

4 Consistently can be aroused to interest; makes moderate progress and shows moderate effort in most areas.

5 Consistently eager to learn; asks useful questions; seems motivated; voluntary effort quite consistently.

VI. Independence and Self-Help:

Points

5 Likes to do things for himself, takes pride in independence; shows good judgment and tolerates help when really needed.

4 Takes major responsibility for self most of the time; occasional encouragement or praise helpful.

3 Takes moderate self-responsibility to extent of ability. Does not need constant attention; verbal help may be increasingly substituted for physical help.

2 Generally dependent in "practice" but willing to try. Will do some things for self with direction, encouragement, and help.

1 Dependent, won't try to do things for self. Expects and demands things done for him.

VII. Persistence with Tasks:

Points

1 Highly distractable; "flits;" minimal interest in making any effort.

2 Easily distracted, but can show some persistence with and occasional favorite activity.

3 Generally fairly persistent with something he likes or wants to do; gives up easily with tasks lacking special interest.

4 Consistently persistent with most activities; can return to task when distracted momentarily; gives up only when really "stymied."

5 Determined to finish whatever he's working on; won't give up; not readily distracted. Lots of task orientation.

VIII. Constructive Conversation and Communication:

Points

5 Good verbal expression skills; uses language meaningfully to communicate with others. "Talks sense."

4 Regardless of speech skill, conveys meanings reasonably well; generally sensible.

3 Regardless of speech skill, expresses self and communicates; may be random or meaningless.

2 Tries to communicate; speech often nonsensical or elliptical, or difficult to comprehend what client (child) is trying to convey.

1 Can or does talk very little; communication efforts minimal, either by gesture or word.

IX. Excessive Conversation:

Points

1 Incessant talking...not conversational; attention-getting, controlling, repetitious, or as dependency; or disconnected content.

2 Rambling and random chatter, but sometimes has a point, and the client (child) beginning to show some control.

3 Generally not constant chatter, but purpose often unclear.

4 Conversation is two-way most of the time, but mature.

5 Conversation is two-way, communicative, reasonable, purposive, and somewhat mature.

X. Stability of Activity Level--Degree of Freedom from Hyperactivity:

Points

5 May be active and enthusiastic when appropriate, but rarely hyperactive; activity generally controlled by client (child), shows purpose and organization.

4 Occasional burst of hyperactivity, but increasing degree of self-control.

3 Generally not hyperactive "on his own", but overresponds to group stimulation and needs staff (adult) help to settle down.

2 Frequently hyperactive, impulsive, and random, but can control to some extent with help.

1 Typically restless and overactive; behavior random, unpredictable, impulsive, nonsocially aware.

XI. Absence of Antisocial Behavior and Fighting:

Points

1 Randomly and constantly aggressive toward any person or thing; unselective, really hurts, doesn't care.

2 Typically aggressive and antisocial, but some selectivity as to object; comes under staff (adult) control with difficulty when angry.

3 Frequently aggressive and antisocial, but with some provocation; comes under staff (adult) control easily.

4 Rarely aggressive or antisocial; seems not to get involved in fights often; takes quite a lot before retaliating.

5 Relationships with others, both clients (children) and staff (adults), are harmonious; the client (child) seems aware of others' feelings and does not fight without real cause.

XII. Absence of Irritability:

Points

5 Unusually easy going and even in disposition; successful at give-and-take with other clients (children).

4 Generally can be counted on to react good-naturedly; usually in a good mood, but may have outbursts with provocation.

3 Easily irritated by teasing or other stimulation; cries easily but generally quick recovery. Client (child) trying to control.

2 Very easily irritated; overacts to most stimuli but irritations do not "pile up" uncontrollably if staff (adult) is near to help stabilize.

1 Hyperirritable; overacts to any stimulus; including teasing without ability to interpret situations.

XIII. Ability to Tolerate Frustrations:

Points

1 Will not try anything he might fail - avoids frustration by limiting activities, but cannot tolerate being frustrated.

2 Very easily frustrated, upset, "stormy," with minimal cause.

3 Gets frustrated often, but snaps back quickly with encouragement or help.

4 Shows frustration only when observable, realistic causes; tries to control.

5 Very rarely shows frustration; overcomes difficulties; make patient effort.

XIV. Apparent Health:

Points	
5	Bubbling with pep, vitality, enthusiasm.
4	Energetic, positive response; seems better than usual in health.
3	Shows average energy, looks OK, seems in average health.
2	Seems vaguely tired, listless, nonparticipating, but no observable symptoms.
1	Shows observable and objective symptoms of not feeling well (running nose, cough, etc.).

APPENDIX C

VIDEOTAPE PROCEDURE

VIDEOTAPE TEST

Procedure

Before the test, while walking to the testing room or asking if the client would come with the investigator for testing, these statements were made by the investigator:

> I would like you to come with me to my office. I am going to ask you to do a few things for me while I take your picture. It will not take very long and then you can go back to your classroom.

When the subject came into the testing room, he was asked to si down at a card table while the experimenter adjusted the the television camera. The first test given to the subject was the Play Dough Test. The experimenter puts four cans of play dough in front of the subject unopened on the card table. There are four colors, red, blue, yellow and white. The subject was then given the instructions. If there is any verbal response on the part of the subject, it was repeated by the experimenter for clarity and to check that the experimenter heard it correctly.

1. Please sit down while I adjust my camera.
2. I would like you to make something out of the play dough.
3. Have you used it before?
4. Can you open the jar? (option)
5. What color would you like? (option)
6. What would you like to make?
7. O.K., you have a few minutes to make it. I'll tell you when your time is up. (Switch to 13 if the subject does nothing after several minutes.)
8. You are doing very well.
9. Are you finished?
10. Can you finish up now? (Used if subject is still working.)
11. What have you made?
12. Can you tell me anything else about it?
13. Well, we must stop now.
14. Thank you.

The camera was then shut off and the experimenter and the subject put the play dough away and the experimenter took all four cans of play dough off the table.

The second test was the Toy Test. It was started after the experimenter placed all the toys (dolls and small models such as a toy TV, airplane and car) on the table in no special order. While the toys were being put on the table, the experimenter said:

1. I have brought some things for you to look at.
2. You can pick them up if you like.

The experimenter then turned on the television camera and said:

3. Would you like to move them all around the table?

The experimenter would then videotape the subject handling the toys for several minutes. Then she asked the following questions:

4. Which one do you like best?
5. Which one don't you like? (Said with feeling for clarity.)
6. What do you think about these things? Anything else?
7. Thank you.

The camera was then shut off and the subject was given these instructions:

8. Would you please move over to this other chair. (Help the subject if necessary.)
9. Please stay seated while I adjust the camera.

The third and last test was the Mirror Test. The subject was seated in front of a four surface screen with four full-length mirrors attached to each surface. The experimenter then adjusted and turned on the television camera and returned to the side of the subject. She gently pushed the chair as close to the mirrors as possible.

1. There are four mirrors here. This is one (point to each), two, three, and four.
2. I would like you to look at yourself in any or all of the mirrors for a few minutes and I will then ask you a few questions.
3. (Remaining by the subject.) Can you see your side in there? Can you see your back? O.K. You can look for a few minutes.

The experimenter then went back to the television camera and focused on a close-up of the subject's face. After a few minutes, the experimenter asked the subject these questions:

4. How do you look? Anything else?
5. How do other people think you look? Anything else?
6. Would you like to look any different? How? Anything else?
7. O.K. Thank you. You may go back to the classroom now.

TABLES

TABLE 1

DISTRIBUTION OF SEX AND AGE CHARACTERISTICS,
I.Q., S.Q., AND P.P.V.T.

TABLE 1

DISTRIBUTION OF SEX AND AGE CHARACTERISTICS, I.Q., S.Q.*, AND P.P.V.T.*

EXPERIMENTAL GROUP

Subjects	Sex	Age	I.Q.	S.Q.	P.P.V.T.
102	F	31	59	45	12.11
104	M	23	42	46	12.1
106	F	29	49	-	10.8
210	M	20	47	40	8.3
211	F	31	54	47	8.3
314	M	29	35	25	7.6
317	M	25	46	-	6.10
319	F	23	42	44	6.8
421	F	34	45	33	6.1
424	M	26	27	-	5.11
528	M	24	47	35	5.8
531	M	22	30	30	5.6
532	F	21	45	45	5.5
635	F	20	35	43	4.11
638	M	23	45	36	4.3
640	M	21	60	-	3.10
744	F	25	-	32	-

CONTROL GROUP

Subjects	Sex	Age	I.Q.	S.Q.	P.P.V.T.
101	F	22	57	-	12.11
105	F	39	57	-	10.8
207	F	30	42	34	8.5
209	F	26	49	-	8.9
212	M	22	49	-	7.10
315	F	23	44	-	7.1
316	M	26	41	-	6.10
318	F	22	56	25	6.10
422	M	23	32	-	5.11
425	M	24	39	-	5.11
526	M	22	46	-	5.9
529	M	20	44	38	5.7
533	M	23	25	32	5.1
634	M	22	49	36	5.1
636	M	20	42	-	4.7
642	F	28	30	29	3.4
743	F	29	39	31	3.4

* Social Quotient (S.Q.) scores are obtained from the Vineland. Peabody Picture Vocabulary Test (P.P.V.T.) scores are mental age estimates based on receptive language ability.

TABLE 2

PREDICTIONS ON BEHAVIOR IMPROVEMENT BY INVESTIGATOR
ON THE B.B.R.S. AND SEMANTIC DIFFERENTIAL

TABLE 2

PREDICTIONS ON BEHAVIOR IMPROVEMENT BY INVESTIGATOR

Subjects	Predictions for Semantic Diff.	Predictions for B.B.R.S.
101	3 4 5	1 5 7
102	1 2 6	3 4 8
103	1 6 9	3 4 8
104	7 9 10	2 5 7
105	4 7 10	2 5 7
106	1 6 10	3 4 8
207	1 2 6	3 4 13
208	5 7 9	5 7 9
210	1 5 6	1 7 10
211	1 6 10	2 5 7
212	2 3 4	2 5 7
213	5 9 10	2 5 7
314	1 5 6	1 2 8
315	1 2 6	7 8 12
316	5 6 9	1 3 5
317	7 9 10	5 7 12
318	1 5 9	3 5 6
319	1 6 9	2 3 4
420	1 2 5	1 4 6
421	1 2 6	3 5 8
422	3 6 9	1 3 13
423	1 6 10	3 4 5
424	3 5 9	3 5 6
425	1 2 6	4 5 7
526	8 9 10	4 7 13
528	5 9 10	2 5 7

continued

TABLE 2 - continued

PREDICTIONS ON BEHAVIOR IMPROVEMENT BY INVESTIGATOR

Subjects	Predictions for Semantic Diff.	Predictions for B.B.R.S.
529	2 3 9	10 11 12
530	1 2 6	4 5 8
531	3 4 6	5 8 13
532	1 6 9	1 3 8
533	1 4 5	7 8 10
534	6 9 10	1 2 5
535	1 3 6	4 7 12
636	5 6 9	1 3 5
637	3 6 10	1 4 8
638	4 5 9	2 5 7
639	3 9 10	5 7 11
640	3 4 10	2 5 7
641	1 8 10	7 8 12
642	4 5 9	5 6 7
743	2 5 6	1 2 5
744	5 6 10	1 2 3

TABLE 3

COMPARISON OF B.B.R.S. MEAN SCORES IN CONTROL AND EXPERIMENTAL GROUPS FOR THREE RATING PERIODS

TABLE 3

COMPARISON OF B.B.R.S. MEAN SCORES IN CONTROL AND EXPERIMENTAL GROUPS FOR THREE RATING PERIODS*

CATEGORIES IN B.B.R.S.	HIGH I.Q. NO. = 17						LOW I.Q. NO. = 17					
	Mean Scores Experimentals N = 10			Mean Scores Controls N = 7			Mean Scores Experimentals N = 7			Mean Scores Controls N = 10		
	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.
I. Conformity to Requests-Cooperative	3.74	3.36	3.50	3.27	3.39	3.44	2.56	2.74	2.87	2.95	3.05	2.86
II. Individual Constructive Activities	3.10	3.14	3.07	3.28	3.38	3.17	2.20	2.39	2.26	2.87	2.85	2.53
III. Participation with the Group	3.52	3.56	3.46	3.10	2.99	3.10	2.51	2.75	2.50	2.94	2.91	2.95
IV. Interaction with Individuals	3.56	3.49	3.50	3.00	3.13	3.14	2.54	2.79	2.75	2.80	2.88	2.99
V. Interest and Progress in Learning	3.07	2.98	3.02	3.09	3.07	3.00	2.31	2.42	2.41	2.81	2.69	2.56
VI. Independence and Self-Help	3.43	3.49	3.26	3.44	3.50	3.37	2.20	2.57	2.54	2.95	3.00	3.01
VII. Persistence with Tasks	3.02	3.10	2.94	3.12	3.35	3.19	2.04	2.39	2.41	2.76	2.99	2.81
VIII. Constructive Conversation and Communication	3.65	3.61	3.55	3.96	3.57	3.66	2.36	2.46	2.64	3.08	3.15	3.13
IX. Excessive Conversation	3.76	3.71	3.60	3.71	3.64	3.37	2.59	3.09	3.00	3.31	3.28	3.16
X. Stability of Activity Level--Freedom from Hyperactivity	3.86	3.77	3.49	3.47	3.33	3.17	2.70	3.36	3.07	3.70	3.17	3.17

continued

TABLE 3 - continued

COMPARISON OF B.B.R.S. MEAN SCORES IN CONTROL AND EXPERIMENTAL GROUPS FOR THREE RATING PERIODS*

CATEGORIES IN B.B.R.S.	HIGH I.Q. N = 17						LOW I.Q. N = 17					
	Mean Scores Experimentals N = 10			Mean Scores Controls N = 7			Mean Scores Experimentals N = 7			Mean Scores Controls N = 10		
	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.	1st Rating Sept.	2nd Rating Dec.	3rd Rating Mar.
XI. Absence of Anti-social Behavior and Fighting	4.04	3.98	3.81	3.93	3.89	3.72	2.79	3.46	3.26	3.59	3.39	3.23
XII. Absence of Irritability	4.01	3.82	3.70	3.72	3.62	3.52	3.30	3.57	3.19	3.28	3.05	2.97
XIII. Ability to Tolerate Frustration	3.63	3.16	3.15	3.33	3.13	2.50	2.64	3.02	2.64	2.94	2.61	2.50
XIV. Apparent Health	3.30	3.48	3.35	3.29	3.47	3.31	3.30	3.56	3.34	3.15	3.39	3.21

* Mean of all judges' ratings.

TABLE 4

RESULTS OF THREE RATINGS ON B.B.R.S. IN PREDICTED CATEGORIES
FOR INDIVIDUAL EXPERIMENTAL SUBJECTS

TABLE 4

RESULTS OF THREE RATINGS ON B.B.R.S. IN PREDICTED CATEGORIES FOR INDIVIDUAL EXPERIMENTAL SUBJECTS

B.B.R.S. CATEGORIES	SUBJECTS (Mean Scores)															
	102	104	106	210	211	314	317	319	421	424	528	531	532	635	638	640	744
I. Cooperativeness																	
1st Pretest				2.8		3.7							3.0				1.0
2nd Pretest				2.9		2.8							3.3				1.4
Posttest				4.1		3.1							2.8				2.0
II. Constructive Activity																	
1st Pretest		2.0			4.1	1.7		3.9			2.9				3.0	2.6	1.2
2nd Pretest		2.5			4.4	1.9		3.9			2.9				2.5	2.9	1.3
Posttest		2.6			4.0	2.0		3.9			3.0				3.0	2.6	1.3
III. Group Participation																	
1st Pretest	3.0		2.3					3.3	4.1	3.8			2.9				1.2
2nd Pretest	3.0		3.0					3.6	4.4	3.9			3.1				1.4
Posttest	2.9		2.8					3.7	4.0	3.6			2.9				1.1
IV. Interaction																	
1st Pretest	2.6		1.9					3.6						2.9			
2nd Pretest	3.3		2.9					3.6						3.4			
Posttest	3.3		2.6					3.6						3.5			

continued

TABLE 4 - continued

RESULTS OF THREE RATINGS ON B.B.R.S. IN PREDICTED CATEGORIES FOR INDIVIDUAL EXPERIMENTAL SUBJECTS

B.B.R.S. CATEGORIES	SUBJECTS (Mean Scores)															
	102	104	106	210	211	314	317	319	421	424	528	531	532	635	638	640	744
V. Progress in Learning																	
1st Pretest		2.4			4.5		2.6		4.3	3.0	3.0	1.8			3.0	2.6	
2nd Pretest		2.8			4.4		2.6		4.3	2.5	2.9	2.4			2.6	2.8	
Posttest		2.6			4.0		2.9		3.8	2.8	2.6	1.8			3.0	3.0	
VI. Independence																	
1st Pretest										3.1							
2nd Pretest										3.3							
Posttest										3.0							
VII. Persistance																	
1st Pretest		1.6		2.4	4.5		2.8				2.9			1.9	3.0	2.2	
2nd Pretest		2.5		2.8	4.3		2.6				2.9			2.8	2.4	3.0	
Posttest		2.6		2.8	3.9		2.8				2.9			2.8	2.8	2.9	
VIII. Communication																	
1st Pretest	2.8		4.1			1.1			4.8			1.0	2.6				
2nd Pretest	3.0		3.4			1.9			4.6			1.0	2.9				
Posttest	3.5		3.3			2.2			4.4			1.0	2.5				

continued

TABLE 4 - continued

RESULTS OF THREE RATINGS ON B.B.R.S. IN PREDICTED CATEGORIES FOR INDIVIDUAL EXPERIMENTAL SUBJECTS

B.B.R.S. CATEGORIES	SUBJECTS (Mean Scores)															
	102	104	106	210	211	314	317	319	421	424	528	531	532	635	638	640	744
IX. Excessive Conversation	No predictions in this category																
X. Stability of Activity																	
1st Pretest			3.4														
2nd Pretest			3.3														
Posttest			3.3														
XI. No Fighting	No predictions in this category																
XII. No Irritability																	
1st Pretest					2.9								2.8				
2nd Pretest					2.8								2.8				
Posttest					2.8								2.8				
XIII. Tolerate Frustration																	
1st Pretest											2.0						
2nd Pretest											2.0						
Posttest											1.9						
XIV. Health	No predictions in this category																

TABLE 5

COMPARISON OF BEHAVIOR SCORES OF EXPERIMENTAL SUBJECTS IN PREDICTED CATEGORIES OF B.B.R.S.

TABLE 5

COMPARISON OF BEHAVIOR SCORES OF EXPERIMENTAL SUBJECTS IN PREDICTED CATEGORIES OF B.B.R.S.

Subjects	Category	Pre-experiment Change	Post-experiment Change
102	3	0	-.1
	4	+.7	0
	8	+.2	+.5
104	2	+.5	+.1
	5	+.4	-.2
	7	+.9	+.1
106	3	+.7	-.2
	4	+1.0	-.3
	8	-.7	-.1
210	1	+.1	+1.2
	7	+.4	0
	10	-.1	0
211	2	+.3	-.4
	5	-.1	-.4
	7	-.2	-.4
314	1	-.9	+.3
	2	+.2	+.1
	8	+.8	+.3
317	5	0	+.3
	7	-.2	+.2
	12	-.2	0
319	2	0	0
	3	+.3	+.1
	4	0	0
421	3	+.3	-.4
	5	0	-.5
	8	-.2	-.2
424	3	+.1	-.3
	5	-.5	+.3
	6	+.2	-.3
528	2	0	+.1
	5	-.1	-.3
	7	0	0
531	5	+.6	-.6
	8	0	0
	13	0	-.1

continued

TABLE 5 - continued

COMPARISON OF BEHAVIOR SCORES OF EXPERIMENTAL SUBJECTS IN PREDICTED CATEGORIES OF B.B.R.S.

Subjects	Category	Pre-experiment Change	Post-experiment Change
532	1	+.3	-.5
	3	+.2	-.2
	8	+.3	-.4
635	4	+.5	+.1
	7	+.9	0
	12	0	0
638	2	-.5	+.5
	5	-.4	+.4
	7	-.6	+.4
640	2	+.3	-.3
	5	+.2	+.2
	7	+.8	-.1
744	1	+.4	+.6
	2	+.1	0
	3	+.2	-.3